**Chapter 9: Process Design and Layout Planning**

**Practice Problems**

**MULTIPLE CHOICE**

1. A collection of interrelated tasks that convert specific inputs into specific outputs is known as \_\_\_\_\_\_.

|  |  |
| --- | --- |
| a. | a process |
| b. | an activity |
| c. | a design |
| d. | a technology |

ANS: A PTS: 1 DIF: Easy

2. When a firm opts to take in producing goods and services determined by the availability and mix of labor, equipment, and automation it is known as \_\_\_\_\_\_.

|  |  |
| --- | --- |
| a. | a process |
| b. | a work design |
| c. | a process strategy |
| d. | a technology design |

ANS: C PTS: 1 DIF: Medium

3. A process strategy that is characterized by the production of unique items and often one kind of items is known as \_\_\_\_\_\_.

|  |  |
| --- | --- |
| a. | continuous |
| b. | job shop |
| c. | project |
| d. | repetitive |

ANS: C PTS: 1 DIF: Easy

4. A process strategy that is characterized by low volumes and sporadic or intermittent production is known as \_\_\_\_\_\_.

|  |  |
| --- | --- |
| a. | continuous |
| b. | job shop |
| c. | project |
| d. | repetitive |

ANS: B PTS: 1 DIF: Medium

5. A process strategy that is characterized by moderate variety and volumes produced in groups is known as \_\_\_\_\_\_.

|  |  |
| --- | --- |
| a. | continuous |
| b. | job shop |
| c. | repetitive |
| d. | batch |

ANS: D PTS: 1 DIF: Medium

6. A process strategy that is characterized by low variety, standardized products, and high volume is known as \_\_\_\_\_\_.

|  |  |
| --- | --- |
| a. | continuous |
| b. | job shop |
| c. | project |
| d. | repetitive |

ANS: D PTS: 1 DIF: Easy

7. A process strategy that is characterized by very high volumes of highly standardized product is known as \_\_\_\_\_\_.

|  |  |
| --- | --- |
| a. | continuous |
| b. | job shop |
| c. | project |
| d. | repetitive |

ANS: A PTS: 1 DIF: Medium

8. A shipyard would be an example of what process type?

|  |  |
| --- | --- |
| a. | continuous |
| b. | job shop |
| c. | project |
| d. | repetitive |

ANS: C PTS: 1 DIF: Medium

9. A doctor’s office would be an example of what process type?

|  |  |
| --- | --- |
| a. | continuous |
| b. | job shop |
| c. | project |
| d. | repetitive |

ANS: B PTS: 1 DIF: Easy

10. A neighborhood bakery would be an example of what process type?

|  |  |
| --- | --- |
| a. | continuous |
| b. | job shop |
| c. | repetitive |
| d. | batch |

ANS: D PTS: 1 DIF: Medium

11. An automobile assembly factory would be an example of what process type?

|  |  |
| --- | --- |
| a. | continuous |
| b. | job shop |
| c. | project |
| d. | repetitive |

ANS: D PTS: 1 DIF: Easy

12. An oil refinery would be an example of what process type?

|  |  |
| --- | --- |
| a. | continuous |
| b. | job shop |
| c. | repetitive |
| d. | batch |

ANS: A PTS: 1 DIF: Easy

13. Which of the following is NOT a characteristic of mass customization?

|  |  |
| --- | --- |
| a. | flexibility |
| b. | loose inventory control |
| c. | rapid innovation |
| d. | use of ERP |

ANS: B PTS: 1 DIF: Medium

14. A way to evaluate the alignment of the needs of a company’s markets with its processes is known as \_\_\_\_\_\_.

|  |  |
| --- | --- |
| a. | process strategy |
| b. | process design |
| c. | product design |
| d. | product profiling |

ANS: D PTS: 1 DIF: Hard

15. Which of the following is NOT an advantage of mass customization?

|  |  |
| --- | --- |
| a. | low cost |
| b. | moderate inventories |
| c. | high quality |
| d. | low lead times |

ANS: B PTS: 1 DIF: Medium

16. Which of the following is NOT a disadvantage of mass customization?

|  |  |
| --- | --- |
| a. | increased capital expenditures |
| b. | unique requirements |
| c. | excess capacity |
| d. | universal across industries |

ANS: D PTS: 1 DIF: Easy

17. Which factor would NOT be a major consideration in deciding whether to produce products in-house or to outsource production?

|  |  |
| --- | --- |
| a. | capacity |
| b. | core competencies |
| c. | legal issues |
| d. | responsible suppliers |

ANS: C PTS: 1 DIF: Medium

18. A type of automation that is appropriate for processes designed to produce large volumes of standardized products that have relatively long life cycles is known as \_\_\_\_\_\_.

|  |  |
| --- | --- |
| a. | continuous |
| b. | fixed automation |
| c. | flexible automation |
| d. | job shop |

ANS: B PTS: 1 DIF: Medium

19. A type of automation that is characterized by high-cost, general-purpose machines that are used to produce a variety of products in low volumes or in small batches and where machines are controlled by computer programs that provide instructions for the sequence of operations to be performed on each product is known as \_\_\_\_\_\_.

|  |  |
| --- | --- |
| a. | continuous |
| b. | fixed automation |
| c. | flexible automation |
| d. | job shop |

ANS: C PTS: 1 DIF: Medium

20. *Computer software and hardware to control machine tools and other related machinery is known as* \_\_\_\_\_\_.

|  |  |
| --- | --- |
| a. | CAD |
| b. | CAM |
| c. | CAPP |
| d. | NC |

ANS: B PTS: 1 DIF: Medium

21. The use of computer technology to assist in planning the processes required to manufacture a part or product is known as \_\_\_\_\_\_.

|  |  |
| --- | --- |
| a. | CAD |
| b. | CAM |
| c. | CAPP |
| d. | NC |

ANS: C PTS: 1 DIF: Medium

22. A processing method that can produce parts, allow changes to be made to products being manufactured, and handle varying levels of production is known as \_\_\_\_\_\_.

|  |  |
| --- | --- |
| a. | CAM |
| b. | CAE |
| c. | CIM |
| d. | FMS |

ANS: D PTS: 1 DIF: Hard

23. When a manufacturing plant uses computers to control all processes, it is known as \_\_\_\_\_\_.

|  |  |
| --- | --- |
| a. | CAM |
| b. | CAE |
| c. | CIM |
| d. | FMS |

ANS: C PTS: 1 DIF: Medium

24. What is an ISO standard for representing and exchanging the design and manufacturing-related information of a product in computer-interpretable format?

|  |  |
| --- | --- |
| a. | ASRS |
| b. | CAE |
| c. | MUFON |
| d. | STEP |

ANS: D PTS: 1 DIF: Hard

25. A computer-controlled system that uses various methods for the automatic placement and retrieval of loads to and from specific storage locations within a warehouse is known as \_\_\_\_\_\_.

|  |  |
| --- | --- |
| a. | ASRS |
| b. | CAE |
| c. | MUFON |
| d. | STEP |

ANS: A PTS: 1 DIF: Medium

26. A document that describes the sequence of different operations, places, or people involved in a process is known as \_\_\_\_\_\_.

|  |  |
| --- | --- |
| a. | a process map |
| b. | a process route |
| c. | service blueprinting |
| d. | value stream mapping |

ANS: B PTS: 1 DIF: Hard

27. A process mapping technique used to analyze and design the flow of materials and information across multiple processes required to bring a product or service to a consumer is known as \_\_\_\_\_\_.

|  |  |
| --- | --- |
| a. | a process map |
| b. | a design map |
| c. | service blueprinting |
| d. | value stream mapping |

ANS: D PTS: 1 DIF: Medium

28. A technique used to analyze service processes, particularly those that have high service content and require customer interaction, such as hospitality services, teaching, and counseling, is known as \_\_\_\_\_\_.

|  |  |
| --- | --- |
| a. | a process map |
| b. | a design map |
| c. | service blueprinting |
| d. | value stream mapping |

ANS: C PTS: 1 DIF: Easy

29. A service process that is characterized by a high level of labor intensity and a low level of customization versus customer interaction would be best represented by \_\_\_\_\_\_.

|  |  |
| --- | --- |
| a. | airlines |
| b. | hospitals |
| c. | retailers |
| d. | tutors |

ANS: C PTS: 1 DIF: Hard

30. A service process that is characterized by a high level of labor intensity and a high level of customization versus customer interaction would be best represented by \_\_\_\_\_\_.

|  |  |
| --- | --- |
| a. | airlines |
| b. | hospitals |
| c. | retailers |
| d. | tutors |

ANS: D PTS: 1 DIF: Hard

31. A service process that is characterized by a low level of labor intensity and a low level of customization versus customer interaction would be best represented by \_\_\_\_\_\_.

|  |  |
| --- | --- |
| a. | airlines |
| b. | hospitals |
| c. | retailers |
| d. | tutors |

ANS: A PTS: 1 DIF: Hard

32. A service process that is characterized by a low level of labor intensity and a high level of customization versus customer interaction would be best represented by \_\_\_\_\_\_.

|  |  |
| --- | --- |
| a. | airlines |
| b. | hospitals |
| c. | retailers |
| d. | tutors |

ANS: B PTS: 1 DIF: Hard

33. What would be the characteristics of a service factory?

|  |  |
| --- | --- |
| a. | low level of labor intensity and a high level of customization versus customer interaction |
| b. | low level of labor intensity and a low level of customization versus customer interaction |
| c. | high level of labor intensity and a low level of customization versus customer interaction |
| d. | high level of labor intensity and a high level of customization versus customer interaction |

ANS: B PTS: 1 DIF: Medium

34. A type of manufacturing method that is used for products that typically require little or no customization, are produced in large volumes, and are stored as inventory for future use is known as \_\_\_\_\_\_.

|  |  |
| --- | --- |
| a. | make-to-stock |
| b. | make-to-order |
| c. | assemble-to-order |
| d. | engineer-to-order |

ANS: A PTS: 1 DIF: Medium

35. \_\_\_\_\_\_ is a method where products are manufactured only after receiving a customer’s order. A combination of standard and custom-made components is used to make the product, but its final configuration is specific for the customer.

|  |  |
| --- | --- |
| a. | Make-to-stock |
| b. | Make-to-order |
| c. | Assemble-to-order |
| d. | Engineer-to-order |

ANS: B PTS: 1 DIF: Easy

36. The process where the basic parts and components of a product are standardized and have already been manufactured and are kept in stock is known as \_\_\_\_\_\_.

|  |  |
| --- | --- |
| a. | make-to-stock |
| b. | make-to-order |
| c. | assemble-to-order |
| d. | engineer-to-order |

ANS: C PTS: 1 DIF: Medium

37. The process that offers the highest degree of product customization and where products are designed, manufactured, and assembled to the customer’s specifications from start to finish is known as \_\_\_\_\_\_.

|  |  |
| --- | --- |
| a. | make-to-stock |
| b. | make-to-order |
| c. | assemble-to-order |
| d. | engineer-to-order |

ANS: D PTS: 1 DIF: Medium

38. Which manufacturing process is appropriate when demand variability is low and product complexity is low?

|  |  |
| --- | --- |
| a. | make-to-stock |
| b. | make-to-order |
| c. | assemble-to-order |
| d. | engineer-to-order |

ANS: A PTS: 1 DIF: Medium

39. Which manufacturing process is appropriate when demand variability is low and product complexity is high?

|  |  |
| --- | --- |
| a. | make-to-stock |
| b. | make-to-order |
| c. | assemble-to-order |
| d. | engineer-to-order |

ANS: C PTS: 1 DIF: Medium

40. Which manufacturing process is appropriate when demand variability is high and product complexity is low?

|  |  |
| --- | --- |
| a. | make-to-stock |
| b. | make-to-order |
| c. | assemble-to-order |
| d. | engineer-to-order |

ANS: B PTS: 1 DIF: Medium

41. Which manufacturing process is appropriate when demand variability is high and product complexity is high?

|  |  |
| --- | --- |
| a. | make-to-stock |
| b. | make-to-order |
| c. | assemble-to-order |
| d. | engineer-to-order |

ANS: D PTS: 1 DIF: Medium

42. A manufacturing system where production is based on forecasted demand or projected sales and demand is often forecast using historical data or past trends is known as \_\_\_\_\_\_.

|  |  |
| --- | --- |
| a. | MTS |
| b. | MTO |
| c. | a push system |
| d. | a pull system |

ANS: C PTS: 1 DIF: Medium

43. A manufacturing system that is based on actual customer orders rather than demand forecasts is known as \_\_\_\_\_\_.

|  |  |
| --- | --- |
| a. | POP |
| b. | MTO |
| c. | a push system |
| d. | a pull system |

ANS: D PTS: 1 DIF: Medium

44. The point that divides the supply chain into the supplier side and the customer side is known as the \_\_\_\_\_\_.

|  |  |
| --- | --- |
| a. | POP |
| b. | MTO |
| c. | push system |
| d. | pull system |

ANS: A PTS: 1 DIF: Easy

45. A layout that a firm uses to meet the different needs of a variety of customers and where similar activities or machines in work centers or departments are grouped together based on the type of the work or function they perform is known as \_\_\_\_\_\_.

|  |  |
| --- | --- |
| a. | cellular |
| b. | fixed position |
| c. | product |
| d. | process |

ANS: D PTS: 1 DIF: Easy

46. \_\_\_\_\_\_ is a layout that works well for repetitive or continuous flow processes and is used to produce a highly standardized product with high and constant demand and where the machines or work centers are arranged according to a predetermined sequence of operations needed to produce the product.

|  |  |
| --- | --- |
| a. | Cellular |
| b. | Fixed position |
| c. | Product |
| d. | Process |

ANS: C PTS: 1 DIF: Medium

47. \_\_\_\_\_\_ is a layout that is an improvement over the straight-line layout, which minimizes the handling of materials and is also more flexible because workers are able to handle jobs in multiple workstations. In addition, this layout allow workers, material handlers, and supervisors to have an unobstructed view of the entire line and to travel efficiently between workstations.

|  |  |
| --- | --- |
| a. | Cellular |
| b. | Fixed position |
| c. | Product |
| d. | U-shaped |

ANS: D PTS: 1 DIF: Medium

48. A layout where resources, such as workers, materials, machines, and tools needed to produce the product, are brought to the product’s location is known as \_\_\_\_\_\_.

|  |  |
| --- | --- |
| a. | cellular |
| b. | fixed position |
| c. | product |
| d. | U-shaped |

ANS: B PTS: 1 DIF: Easy

49. When materials from incoming transportation carriers are unloaded and instead of storing them in the warehouse, they are directly loaded on outbound carriers intended for different destinations, that is known as \_\_\_\_\_\_.

|  |  |
| --- | --- |
| a. | cellular |
| b. | cross-docking |
| c. | fixed position |
| d. | product |

ANS: B PTS: 1 DIF: Medium

50. Which is not a disadvantage of a cellular layout?

|  |  |
| --- | --- |
| a. | yields reduction in setup times |
| b. | doesn’t work well with low volumes |
| c. | difficult to balance workflows |
| d. | workers may not be motivated to acquire new skills |

ANS: A PTS: 1 DIF: Hard